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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/875,177	06/06/2001	Joseph Lincoln Komen	24484	7704

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EXAMINER
WHITE, EVERETT NMN

ART UNIT	PAPER NUMBER
1623	6

DATE MAILED: 02/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Restart 3/13/03

Office Action Summary	Application No.	Applicant(s)	
	09/875,177	KOMEN ET AL.	
	Examiner	Art Unit	
	EVERETT WHITE	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-79* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-79* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2 & 5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election of species, which include cellulose as the carbohydrate product, nitroxides of the heterocyclic oxammonium salts as the primary oxidants, chlorine dioxide as the secondary oxidant, and a chlorine dioxide/hydrogen peroxide mixture as the tertiary oxidant in Paper No. 4 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Upon the allowance of a generic claim, Applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of the allowed generic claim as provided by 37 CFR 1.141.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-79 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The metes and bounds of the term "latent sources of chlorine dioxide" in Claims 1 and 64 cannot be determined which renders the claims indefinite. The term "latent sources of chlorine dioxide" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claims 2-63 and 65-79 are also rejected since these claims depend from Claims 1 and 64 and do not correct this error.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-7, 30-42, 46-48, 50-54 and 57-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Besemer et al (WO 95/07303).

Applicants claim a method of making a carboxylated carbohydrate product which comprises: oxidizing a carbohydrate compound by reacting it in an aqueous system with a sufficient amount of a primary oxidant selected from the group consisting of hindered heterocyclic oxammonium salts in which the carbon atoms adjacent the oxammonium nitrogen lack α-hydrogen substitution, the corresponding amines, hydroxylamines, and nitroxides of these oxammonium salts, and mixtures thereof, and a secondary oxidant selected from chlorine dioxide and latant sources of chlorine dioxide in a sufficient amount to induce an increase in carboxyl substitution in the carbohydrate of at least 2

meq/100g. Additional limitations in the dependent claims include characterizing the carbohydrate as cellulose and starch; specific types of nitroxides; pH of the aqueous system; the amount of primary oxidant; the time of initial oxidation step; treating the carboxylated cellulose fibers with a tertiary oxidizing agent; and treating the carboxylated cellulose fibers with a reducing agent. An election of species requirement was issued for this case, wherein Applicants selected cellulose as the carbohydrate, nitroxides of the hetercyclic oxammonium salts as the primary oxidant, chlorine dioxide as the secondary oxidant. The rejection below is based on the elected species. Claims that have not been rejected and do not contained the elected species are withdrawn from consideration with regard to the rejection of the claims under 35 U.S.C. 103.

The Besemer et al patent discloses a method for oxidizing carbohydrates by treatment with a hypohalite in the presence of a catalytic amount of a ditertiary-alkyl nitroxyl (see abstract). Besemer et al discloses that the carbohydrate may be selected as cellulose and starch (see page 5, 1st paragraph), which embraces the cellulose and starch of the instant application. In the abstract, the Besemer et al patent discloses that the ditertary-alkyl nitroxyl may be 2,2,6,6-tetramethylpiperidin-1-oxyl, which embraces the nitroxides of the hetercyclic oxammmonium salts of the instantly claimed invention. The abstract sets forth the amount of nitroxyl to range from 0.1 to 2.5 %, which embraces the amount of primary oxidant used in the instantly claimed invention. Besemer et al discloses that the hypohalite may be selected as sodium hypochlorite (see page 4, 1st paragraph), which embraces the secondary oxidant of the instantly claimed invention. Claim 1 sets forth latent sources of chlorine dioxide as an optional choice for the secondary oxidant, which is embraced by the sodium hypochlorite of the Besember et al patent. The first paragraph of page 4 also discloses the amounts of secondary oxidants that can be used in the Besemer et al patent, which embraces the amount of secondary oxidants used in the instantly claimed invention. The abstract discloses that the oxidation process is carried out in a water-containing medium at pH 9-13 and indicates that the oxidation leads to products having a high content (greater than 90%) of carboxyl groups, without significant chain breakdown. This statement embraces the pH, aqueous system and the amount of carboxyl substitution in the

carbohydrates indicated in the instantly claimed invention. The instant claims differ from the Besemer et al patent by disclosing further treatment of the carboxylated cellulose fibers with a reducing agent. In the background section of the invention, the Tang et al patent shows that the use of a reducing agent with cellulose material is well known in the art. See column 2 lines 39-42 of the Tang et al patent, whereby Tang et al, for background information about the invention thereof, refers to Canadian Pat. No. 610,655 as a reference, which discloses the use of a reducing agent, such as sodium borohydride, to improve the color stability of cotton linters, which have been bleached with sodium hypochlorite. Cotton linters embrace cellulose since cellulose is contained therein.

A person of ordinary skill in this art would be motivated to combine the teachings of the Besemer et al patent with the teachings of the Tang et al patent for a rejection of the claims under 35 U.S.C. 103 since both patents disclose procedural steps for oxidizing cellulose material and the skilled artisan would seek to optimize oxidation procedures for said cellulose material.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a method of making a carboxylated cellulose product by oxidizing the cellulose as disclosed in the Besemer et al patent and to further treat the carboxylated cellulose with a reducing agent in view of the recognition in the art, as evidenced by Tang et al patent, that use of a reducing agent improves the color stability of oxidized cellulose products.

Summary

6. All the pending claims are rejected.

Examiner's Telephone Number, Fax Number, and Other Information

7. For 24 hour access to patent application information 7 days per week, or for filing applications, please visit out website at **www.uspto.gov** and click on the button "Patent Electronic Business Center" for more information.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Everett White whose telephone number is (703) 308-

4621. The examiner can normally be reached on Monday-Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson, can be reach on (703) 308-4624. The fax phone number for this Group is (703) 308-4556.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1235.

E. White
E.White

James O. Wilson
Supervisory Primary Examiner
Technology Center 1600